SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANT: KLIPPEL PH.D., ANKE
                 KAVANAUGH M.D., MIKE
                 HARRISON PH.D., STEVE
                 WILLIAMS MDPHD, LEWIS T.

    (ii)   TITLE OF INVENTION: PI 3-KINASE MUTANTS AND USES
           THEREOF

    (iii) NUMBER OF SEQUENCES: 12
      (iv) CORRESPONDENCE ADDRESS:
          (A) ADDRESSEE: CHIRON CORPORATION
          (B) STREET: 4560 HORTON STREET
          (C) CITY: EMERYVILLE
          (D) STATE: CA
          (E) COUNTRY: USA
          (F) ZIP: 94608

      (v) COMPUTER READABLE FORM:
          (A) MEDIUM TYPE: Floppy disk
          (B) COMPUTER: IBM PC compatible
          (C) OPERATING SYSTEM: PC-DOS/MS-DOS
          (D) SOFTWARE: PatentIn Release #1.0, Version #1.30

      (vi) CURRENT APPLICATION DATA:
          (A) APPLICATION NUMBER:
          (B) FILING DATE:
          (C) CLASSIFICATION:

    (viii) ATTORNEY/AGENT INFORMATION:
          (A) NAME: GUTH, JOSEPH H.
          (B) REGISTRATION NUMBER: 31,261
          (C) REFERENCE/DOCKET NUMBER: 1201.004

      (ix) TELECOMMUNICATION INFORMATION:
          (A) TELEPHONE: 510-923-3888
          (B) TELEFAX: 510-655-3542

(2) INFORMATION FOR SEQ ID NO:1:
    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 33 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
    (ii) MOLECULE TYPE: cDNA
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:
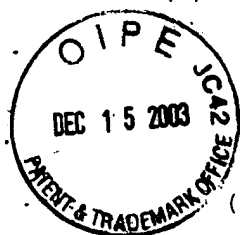GCGCCCACCA TCATCACCAC CATTGAGTCG ACG   33

(2) INFORMATION FOR SEQ ID NO:2:
    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 33 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

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        (ii) MOLECULE TYPE: cDNA
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:
GATCCGTCGA CTCAATGGTG GTGATGATGG TGG                                    33


(2) INFORMATION FOR SEQ ID NO:3:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 5 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: peptide
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:
        Asp Leu Gly Gly Ala
        1               5


(2) INFORMATION FOR SEQ ID NO:4:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 25 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: cDNA
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:
CGTCGCCATT TCTAAAGATG ATCTC                                             25


(2) INFORMATION FOR SEQ ID NO:5:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 50 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: cDNA
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:
TATGTCCCCC GTTCAGGTCC TCCTCGGAAA TCAGCTTCTG CTCATCCATT                  50


(2) INFORMATION FOR SEQ ID NO:6:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 52 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: cDNA
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:
CTAGAATGGA TGAGCAGAAG CTGATTTCCG AGGAGGACCT GAACGGGGGA CA               52


(2) INFORMATION FOR SEQ ID NO:7:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 10 amino acids
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: peptide
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:
        Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
        1               5                       10


(2) INFORMATION FOR SEQ ID NO:8:
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      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 90 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
     (ii) MOLECULE TYPE: cDNA
     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:
GCATTCTCAC ATGATCACGC ACTTGGTCTT GGACTTCTTC TTCTTCTTTT TGCCATCTTT     60
GGAGGCGCCG AGCTCGTTCA AAGCATCCTG                                      90


(2) INFORMATION FOR SEQ ID NO:9:
      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 81 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
     (ii) MOLECULE TYPE: cDNA
     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:
GGATCCTCAG CTCAGCACGC ACTTGCAGCT CATGCAGCCG GGGCCGCTGC TGGCGCCCCC     60
GAGCTCGTTC AAAGCATGCT G                                               81


(2) INFORMATION FOR SEQ ID NO:10:
      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 18 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
     (ii) MOLECULE TYPE: cDNA
     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:
CTGAGCAAGA AGCTTTGG                                                   18


(2) INFORMATION FOR SEQ ID NO:11:
      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 46 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
     (ii) MOLECULE TYPE: cDNA
     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:
TATGTCCCCC GCGCTGGCTG GGGTCCTTGG TCGTCTTGCT GCTCCC                    46


(2) INFORMATION FOR SEQ ID NO:12:
      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 51 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
     (ii) MOLECULE TYPE: cDNA
     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:
CATGGGGAGC AGCAAGAGCA AGCCCAAGGA CCCCAGCCAG CGCGGGGGAC A              51
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